Patients with Multiple Injuries

Management in Office Practice

LEONARD MARMOR, *M.D.*, Los Angeles

• **In the emergency treatment of a patient with multiple severe injuries who is brought to a physician's office from the scene of an accident, the physician must make sure that a way for air to reach the lungs is open, must treat or prevent shock, stop hemorrhage and apply temporary splints to fractures of the extremity.**

The possibility that the tip of the tongue is blocking the pharynx and that blood or other fluid is clogging the airway must be considered. Fluids should be administered intravenously to prevent shock and gauze pads should be held firmly in place to control bleeding.

ALMOST EVERY PHYSICIAN has had or sometime will have the problem of treating a severely injured patient who appears suddenly as the result of an accident which has occurred near his office. The situation is a hazardous one which must be handled expeditiously.

With the development of specialization in medicine, it is becoming more and more difficult for one physician to have all the knowledge necessary for the best treatment of a patient with multiple injuries.

It was estimated that in the year 1958 there were 9,500,000 accidental injuries and 95,000 deaths from them. It is probable that rapid, skillful medical attention could save some of those who die.

Since most accidents that cause multiple injuries are caused by automobiles, it would be of value to review some statistics on these accidents. Kulowski, in reviewing the deaths following automobile accidents, described three categories:[1]

Immediate death (died at accident)	10 per cent
Intermediate (up to 48 hours after injury)	66 per cent
Delayed (after 48 hours)	24 per cent

It is patients in the intermediate group who are likely to be taken to a physician's office and who may be saved by rapid and adequate care. The primary cause of death among those who died within 48 hours was traumatic shock, and the associated injury was most often chest injury. The high mortality rate in this intermediate time emphasizes the need for improved emergency treatment.

In the group in which death did not occur within 48 hours, the cause of death was intrathoracic, intracranial or abdominal injury. There was a greater variety of medical problems in this category.

In a review of 661 severe accidents, Kulowski noted that the frequency of injury to the head and face was 39 per cent, to the extremities 28 per cent, and to the chest 14 per cent. Head injuries, concussions included, were eight times more frequent than injury to the chest or abdominal cavity.

With the number of automobiles on the road and the average horsepower of the automobile both constantly increasing, a physician whose circumstances of practice are such that he might become involved must ask himself what he will do if the door of his office or emergency room opens and a severely mutilated patient suddenly appears.

If the patient is brought in on a stretcher, he should not be moved from it until he reaches a hospital bed or an operating room table. Moving a patient with severe injuries can throw him into shock or cause further trauma. The care of asphyxia, shock and hemorrhage take precedence over everything else.

Pulmonary Complications

If the patient is unconscious or severely injured, the first thing to check is the airway, noting meanwhile whether the patient is breathing with difficulty or appears cyanotic. It is possible that the throat is blocked by the tongue or by blood and mucus. If so, the tip of the tongue must be pulled forward or suction applied to remove secretions. The patient should be placed recumbent with the head slightly lowered and turned to the side to prevent the tongue from dropping back into the pharynx or the aspiration of secretions, blood or vomitus. If oxygen is available it should be administered by nasal catheter or mask. (An exception to this positioning is made in the case of severe injury to the chest, the patient then usually being more comfortable in a semi-sitting position.)

If blood continues to accumulate and block the airway, tracheostomy should be done without delay. Oxygen may be given by catheter through the opening.

From the Department of Surgery (Orthopedics), University of California Medical Center, Los Angeles 24.

Presented at the Medical Seminars for General Practitioners, July 9, 1961, University of California Conference Center, Lake Arrowhead.

Submitted November 15, 1961.

Any physician doing general practice or handling emergencies should have a tracheostomy tray available in his office. To perform an emergency tracheostomy in the office, a rolled sheet is placed between the shoulder blades to hyperextend the neck. The skin and deeper tissues are infiltrated with a local anesthetic and a low transverse skin incision is made. The strap muscles are divided in the midline, and the thyroid isthmus is retracted upward, or is divided if necessary. A small segment of either the third or fourth tracheal ring is removed, and the tube is inserted.

If breathing is labored even though the airway is patent, a flail chest, a sucking wound of the chest or pneumothorax must be suspected. Any of these conditions, if not dealt with rapidly, can cause death before the patient can reach a hospital.

A sucking wound permits enough air to be drawn into the chest to collapse a lung. The wound must be closed immediately; a gauze pad impregnated with petrolatum is pressed against the opening and several abdominal pads are taped over it until definitive operation can be performed.

The driver of an automobile may be thrown against the steering wheel, a severe blow to the sternum and rib cage causing multiple fractures of the ribs. With the usual form of the thoracic cage thus altered, the pleural cavity can collapse upon inspiration. This paradoxical motion demands immediate attention. The collapse can be reversed by inserting a towel clip into the sternum and applying traction to it.

The other major pulmonary problem of primary concern is extensive pneumothorax, which can be brought about by fractures of the ribs and tearing of the pleura and lung. If the patient is quite short of breath, tension pneumothorax should be suspected. Percussion and auscultation may confirm this diagnosis. A needle should be introduced into the third interspace anteriorly and the air aspirated. Rubber tubing attached to the needle can be placed into a water-seal bottle if necessary.

Hemorrhage

Hemorrhage should be treated early to prevent further loss of blood and deeper traumatic shock. Saving blood is far better than replacing it with blood from a donor. The best way to stop external bleeding is by direct pressure with a gauze pad applied over the vessel. Tourniquets should be avoided if at all possible, for the occlusion they bring about may be so severe that the limb is endangered.

Shock

Even if the patient is not in shock when the physician first sees him, shock may be expected. Sometimes it comes suddenly and causes complete collapse. The physician should not wait for a fall in blood pressure before starting treatment of shock, since by the time pressure falls shock is well advanced. It is wise to start intravenous infusion of fluids with a large bore needle—at least 18 gauge—and at the time of insertion of the needle, a specimen of blood may be withdrawn for typing and cross-matching. If the patient is severely injured, infusion should be started at several points in the extremities, for when shock occurs the veins may collapse, making insertion of a needle difficult. Dextrose and water or saline solution is a poor substitute for blood but can be used to keep the veins open. Blood substitutes like Dextran® may be used until whole blood can be obtained. Plasma may also be used, but only with care, because of the problem of viral hepatitis. If one is sure of the source, it is an excellent substitute. It is important to emphasize that in traumatic shock, whether there is evidence of blood loss or not, whole blood is needed.

Pain in itself may potentiate the development of shock. If there is no evidence of a head injury, morphine may be given for severe pain. Since peripheral vascular collapse may make for poor absorption of the drug if injected intramuscularly, it may be given intravenously. It ought not be used if brain injury is suspected since constriction of the pupils caused by morphine masks the development of increased cranial pressure.

If the patient is cold, a blanket may be added to keep him warm but care should be taken not to overheat him lest sweating cause further loss of fluid.

TRANSFER TO THE HOSPITAL

Once the major causes of death following a severe accident are under control, the physician can appraise the patient's injuries and arrange for transferring him to a hospital for definitive care. A few minutes spent in trying to learn the mechanism of the accident may save the patient's life. The type of accident may give a clue to possible internal injuries which might otherwise be overlooked in favor of the most obvious external injuries.

While waiting for the ambulance, the physician should gently perform a very brief physical examination. Rough handling may cause severe traumatic shock. Clean compresses should be applied to all bleeding wounds and splints applied at any points where it appears there may be fractures of extremities.

Getting the patient to a hospital quickly is important. Repair of lacerations and taking x-ray films can wait until then. Even films of the skull are not an emergency unless the patient is comatose or one

suspects a depressed skull fracture or fractures involving the middle meningeal artery. Transfer to a hospital may be undertaken as soon as a satisfactory airway is established, shock is being treated or prevented and hemorrhage is controlled. It is the treating physician's duty to make the emergency room aware of the possibility of multiple injuries, particularly if there is one obvious lesion that might otherwise get all the attention. If the first-aid physician administers any drug, he ought to make note of it on a tag attached to the patient or by marks on the patient's forehead.

Department of Surgery and Orthopedics, U.C.L.A. Medical Center, Los Angeles 24.

REFERENCE

1. Kulowski, J.: Motorist injuries, Clinical Orthopedics, 7:243, 1956.